

St. John's Church, Waterloo-road, Lambeth.—A painted window, containing 98 feet super. of glass, has been recently put up in the east window of St. John's Church, Waterloo-road. The design comprises in the centre a crucifixion, in the manner of the early Christian painters, with figures of St. John, Mary Virgin, Mary Magdalene, at foot of the cross, &c.; the cross is surmounted by a pelican in her piety, above which are angels holding a crown of vine leaves. The border contains figures of the four Evangelists, with their emblems beneath the feet of each; also the *Agnus Dei*, chalice and wafer, &c., comprised in a rich mosaic, in which are introduced passion flowers, crosses, the emblems of the Trinity. The colouring throughout is rich. In the design generally a severity of feeling adapted to the devotional character of the subject has been observed, at the same time with an endeavour to avoid the imperfect drawing of the early artists. The work has been executed by Mr. Wilmshurst, from the designs of Mr. N. J. Cottingham, at a limited cost. The reredos and sacristy are decorated in polychrome (less successfully than the window); and a large painting of the entombment of our Lord is in progress for the former. The style of the church is Domestic Greek, so to speak: the strictly correct character of glass for such a building is still a question.

MEMS. PROVINCIAL.

THE foundation stone of a new tower to Halstead old church was laid on the 20th inst. Mr. Clarke, the diocesan architect, furnished the design. In a field at Hadstock, known as the "Bunkin Church Field," the Hon. Mr. Neville has discovered a Roman villa, with hypocaust, flues, &c.—It has been determined to proceed with the extension of the chancel and the Norman east end of St. Peter's, Northampton, on the plans of Mr. Scott, architect, as amended from late discoveries, leaving the contract for interior fitting up for further subscription.—A parsonage house is about to be erected at Barsledon, on plans furnished by Messrs. Hince and Bedborough, of Portland-street, Southampton, architects.—Workmen are engaged in fixing a new lighting-conductor to the spire of Salisbury Cathedral.—Lord Campbell, while complimenting Monmouth on the condition of the judges' lodgings, in his charge to the grand jury, complained of the wretched state of those in the adjoining county of Gloucester, which, said his lordship, are not fit to live or breathe in.—The Liverpool Gas Company have, as usual ever since those great reductions of price which were to ruin them, announced a dividend of five per cent. for the last half-year, being the highest allowed them by their own Act of Parliament.—An aisle and small gallery, with about 250 additional kneelings, is to be added to St. Paul's Church, Seacombe.—A proposal has been originated in Darwen to construct public baths, as a memorial, in that town, to the late Sir Robert Peel.—The foundation-stone of the church of St. Jude, in the Epkeyle, Birmingham (Mr. C. W. Orford, architect, and J. Wilson, builder), was laid on Wednesday week.—Congregational schools have been erected at Wednesbury, at a cost of 1,400l. Mr. B. Round has given 550l. towards the erection. The building is of stone, in the Early English style, with upper and lower room, each measuring 55 feet long by 28 feet wide, and accommodation for upwards of 600 children.—It has been resolved to form a "Peel Park" at Macclesfield, and, if possible, also to establish a free library and reading-room, in honour of the deceased statesman.—A sort of district preparatory Exhibition of Industry has been got up at Nottingham, which is said to be both extensive and numerously attended. One of the local newspapers is being printed in public, by way of industrial exhibition. The Mechanics' Institution is the locus in quo.—The Leeds Town Council are about to seal the contract entered into with Mr. George Clark Pauling, of Manchester, for the formation of new sewerage. The amount of tender is 39,804l., which is 5,154l. more than that of Messrs. Warren and Dunscombe, who, as stated in the *Intelligencer*, declined to complete the contract, which was offered to them. The work will be commenced forth-

with.—A new parsonage house is about to be built at Holbeck, on a plan provided by Messrs. Perkin and Backhouse, of Leeds, architects.

BOOKS.

On the Strength of Materials, with original and useful Formulae specially applied to Tubular Bridges, Wrought-iron and Cast-iron Beams, &c. By THOS. TATE. Author of "Principles of Differential and Integral Calculus," &c. Longman, Brown, Green, and Longmans.

Tables of the Strength and Deflection of Timber. By WILLIAM LEA, Surveyor. Simpkin, Marshall, and Co., Stationers' Hall-court.

Mr. Tate is an indefatigable and a useful author. The purpose of his present volume is sufficiently indicated in the title. It is full of valuable algebraic and other formulae, on which such results as the following are established:—

Why the Cellular Structure exhibits such Strength.—Let ac and eo represent the sections of two beams undergoing transverse strains, in all respects the same, excepting that in the former case the material at a is composed of horizontal plates to contact with each other, whereas in the latter case the material is arranged in the form of cells: the horizontal plates being connected by vertical plates or ribs, a, b, c, d , &c.

When thin plates of wrought iron are subject to compression, they double or crumple up long before the material would be destroyed under ordinary circumstances by crushing. In the first case of construction (1st fig.), no means are employed to counteract this tendency to double; but in the latter case it is different. Here the horizontal plates, as well as the vertical ones, have a tendency to double up; but the direction of this tendency in the former is in a plane at right angles to the plane in which the latter would take place; that is to say, the horizontal plates ae and eo tend to crumple vertically, while the vertical plates ab, bc, cd , &c. tend to crumple horizontally. Again, the direction of greatest strength in the vertical plates is in the vertical line, and at the same time the direction of weakness of the horizontal plates is also in the vertical line, and vice versa: hence the horizontal plates ae and eo are prevented from crumpling by the vertical plates ab, bc, cd , &c. and vice versa. It is evident that the horizontal plates ae and eo could not crumple without exerting a vertical strain upon the vertical plates ab, bc, cd , &c.; and, in like manner, the vertical plates could not crumple without exerting a horizontal strain upon the horizontal plates.

It appears, therefore, that the object of the cellular structure is to counteract the tendency which thin plates, acted upon by a compressive force, have to crumple, and thus to cause the tubular beam to be subjected to the same laws of transverse strain as an ordinary beam. Hence it is not necessary that the bottom part of the tube should have a cellular structure.

Mr. Lea's "Tables" are designed for the practical use of architects, builders, engineers, and others interested in converting timber into scantlings for building purposes generally, or for otherwise sustaining transversely any given pressures. The timber selected as the unit or standard of comparison is red pine of a given strength and elasticity, and the constants for various species of timber are derived from the mean results of experiments made principally by Professor Barlow.

Linear Tables for Facilitating the Calculations of Areas and Earthwork. By ARTHUR W. FORD, C.E. T. W. Saunders, Charing-cross.

In the use of these tables the process of calculation is altogether mechanical. The lines and figures of which they are made up are drawn on cardboard, on which the author conceives that more dependence may be placed than on ivory or box-wood scales, so far as regards atmospheric influence, but whether he includes the influence of damp in general amongst the variations referred to, does not appear. Unquestionably, such tables are of a somewhat tender frame and texture, liable to other trischiefs besides mere atmospheric influences. An accidental crease, or blister from a drop of ink or other fluid, might easily

involve irremediable damage. Nevertheless, to otherwise useful tables, such objections are by no means vital, and the author is of opinion that "the chance of mistake by the ordinary mode of computation is much greater than by using these tables." They are very delicately drawn, and the cardboard is firm and good. The accompanying explanation requires, of course, some careful study previous to practical use of the tables.

The Civil Engineers' and Surveyors' Companion and Assistant, in Setting out Slopes, Curves, Cuttings, and Embankments, with comprehensive Tables, &c. By EDWARD BYDE, Land Surveyor and Civil Engineer. Published by the Author, Upper Belgrave-place, Eaton-square.

Unfortunately *The Civil Engineers' and Surveyors' Companion* is likely to be more a companion in adversity than an assistant, as slopes and cuttings have most of them long since sloped and cut. It is to be hoped, however, that there may be another "good time coming." Meanwhile Mr. Byde has, though somewhat tardily, or at least unanimously, made laborious and diligent use of past opportunities. The scheme and its development are, he states, purely and originally his own, and are indeed, he adds, of far too prolix and wearisome a nature to be likely to procure many competitors. Though tedious in development, however, the tables are clear and concise in result, and worthy hence of procuring many purchasers, though few competitors. *Ex facie*, while at easy reference, they obviate entirely the necessity of calculation, so that the tedious complicated and difficult process of setting out slopes and curves by the existing system, may thus be simplified by tabular arrangement.

A Continuation of the Memoirs of a Working Man, illustrated by some original Sketches of Character. London: C. Cox, King William-street, Strand.

The favourable reception given both by reviewers and by general readers to the "Memoirs of a Working Man," has naturally suggested a "Continuation" of them, in accordance with a desire expressed by readers to have what was wanting supplied, with more explicit details on some points in his history, formerly treated of within rather too modest dimensions. The tendency of the whole, in its probable influence on working men, is excellent, and we are inclined to think that a member of a class, if imbued with right principles himself, and capable of communicating these in attractive or even in merely intelligible language to his fellows, will constitute a potent and practical moral teacher. On the mere law of class imitation this will be so. The natural tendency of tribes possessed of common similitude in nature or in circumstance to imitate leading or current tribe examples, is well known, whether amongst men, women, or children, and not amongst human tribes alone. As to capability, the present author displays far more than an average power over his mother tongue. His style is fluent and correct, and even often elegant, though simple and unassuming, and thus it constitutes an admirable instrument in the hands of such a teacher, who will produce impressions all the deeper in the hearts of his fellow-workmen, that they have much in sympathetic with, in the interesting narration of the teacher's personal and domestic troubles and anxieties,—"so like their own."

MISCELLANEA.

SMOKE CHIMNEYS.—The following cure for a smoky chimney of the olden time is taken from a book of receipts about 1550 (the spelling is modernised):—"How to keep Smoking Chimneys.—If the chimneys be large, and carry some good length and breadth with them, then may you erect or build a false back and sides to your smoking chimneys, so as there may be a distance of three or four inches between the old back and the new: raise this new work a foot above the mantle-tree. Warranted by a gentleman of Ireland, being a great practiser in artifice conclusions. Qre."—W. P.